As regards the correct position of the *Ceratodus forsteri* in the "Systema Naturæ," we must, of course, wait until more specimens are procured for the examination of competent naturalists, the single example in the Australian museum being in an incomplete condition, from the internal organs having been removed. Mr. Krefft calls it a "gigantic amphibian," not being aware probably that all the best authorities now follow Johann Müller in classing *Lepidosiren* as a fish. It is, however, certain that, as Dr. Günther pointed out at the meeting of the Zoological Society when Mr. Krefft's paper was read, this fish must either be placed, along with *Lepidosiren* and its African representative *Protopterus*, in the order Dipnoi, or that it must form of itself a new division of the Ganoid fishes. We must know more of its internal structure, and in particular of the organs of circulation, before this question can be decided. Mr. Krefft has referred the fish to the genus *Ceratodus*, a name established by Agassiz in his "Poissons Fossiles" for the indication of certain teeth which were then supposed to be those of some kind of shark. Dr. Günther, our best living authority on the class of fishes, is, I believe, of opinion that, so far as the structure of *Ceratodus* is known, there is nothing to show that Mr. Krefft's decision is wrong, though it would appear to me to have been better to have proposed a new generic name for this animal.

In conclusion, I may express a hope that this short notice may have the effect of calling the attention of some of the colonists of Queensland to the wonderful nature of this relic of the Devonian epoch that is now swimming about beneath their noses, and that they will cease, for the present at least, to kill it and eat it as "salmon." Any specimens that may "rise to their fly" should be carefully kept out of the way of the cook, preserved in alcohol and transmitted to the British Museum or some other scientific institution. When the existence of *Ceratodus forsteri* becomes more widely known, there will be no lack of applicants for examples of it. P. L. SCLATER

NOTES

THE Syndicate appointed by the University of Cambridge to consider the question of the manner in which provision may be made for the establishment of a Professorship of Physical Science, and increasing the facilities for instruction in it, have again reported to the Senate. It may be remembered that the former report, after having been discussed in the Schools, was referred back to the Syndicate by the Council. The present report, however, only differs in one important point from the former, in recommending that the increase in the tax levied upon the M.A. members of the University should be temporary instead of permanent. It had been hoped by many that the Syndicate would have taken courage from the general tone of the debate, have cancelled their former report, and proposed some bolder and more thorough measure. It is, however, not very probable that the University will accept the report. Several influential members of the Syndicate have not signed it; and there appears to be a growing feeling in Cambridge that, notwithstanding the obvious evil of delay, to postpone for a few months the appointment of a Professor would be better than to carry at once a temporary and unsatisfactory scheme.

THE Council of the Society of Arts at their meeting on Monday last, awarded the Albert gold medal for the present year, to M. F. de Lesseps, "for services rendered to arts, manufactures, and commerce, by the realisation of the Suez Canal."

WE regret to learn that Baron Liebig continues dangerously ill. He has recently submitted to two operations for a very painful abscess in the shoulder, and continues very weak, but perfectly clear and cheerful, although believing that death is near.

THE new lectures on physiology at Trinity College, Cambridge, by Prof. Foster, will, we understand, be open to all members of the University, so that this liberal act on the part of the college is practically equivalent to the foundation of a professorship of physiology in the University.

THERE will be an examination at St. Peter's College, Cambridge, on Tuesday, June 14, for a Natural Science Scholarship, of the value of 60*l*. per annum. It will be open to all persons who may desire to enter at the University. The subjects are chemistry, comparative anatomy, physiology, and botany. Names of candidates must be sent a week previously to Rev. J. Porter, tutor of the college, from whom further information may be obtained.

AT the meeting of the French Academy of Sciences, held on the 30th ult., Mr. Joule was elected a correspondent in the Physical section by 32 votes out of 43. Of the remainder, Professor Lloyd obtained eight, and Professors Angström, Dove, and Volpicelli one each.

THE Senate of the Queen's University in Ireland has unanimously passed a resolution conferring the honorary degree of Doctor in Science on Prof. William King, in recognition of his scientific attainments.

WE learn from the *Moniteur Scientifique*, that M. R. Radau has been charged with a commission from the French Minister of Instruction to visit Germany, for the purpose of studying the organisation for instruction in the higher mathematics in the principal universities of that country, and prepare a report.

A MONUMENT to John Kepler, at Weil der Stadt, the birthplace of the great astronomer, will be uncovered on the 24th inst. Subscriptions have been received from all parts of Germany, France, Russia, and even North America.

ON Friday, May 26, Dr. Carpenter delivered a lecture on the Physical and Biological Conditions of the Deep Sea, in the Senate House, Cambridge. His remarkably lucid and interesting account of the results of the late expeditions, illustrated by some beautiful diagrams, was listened to with great attention by a very large audience, and at the conclusion, the Master of Christ's College (who occupied the chair in the unavoidable absence of the Vice-Chancellor) proposed, and Prof. Sedgwick seconded, a vote of thanks to the lecturer, which was carried with enthusiasm. The latter made some remarks upon the bearing of Dr. Carpenter's discoveries upon Geology, which showed that notwithstanding the burden of eighty-five years, the old fire was still burning brightly.

DR. HASSKARL, formerly superintendent of the Botanic Gardens, and introducer of the Cinchona plant into Java, publishes a monograph of the Indian *Commelinaceæ*, especially those of the Indian Archipelago, with a few other species.

WE have received papers of Port Louis, Mauritius, for April 9th, containing a report of the meeting of the Meteorological Society, held March 24, when a valuable paper was read "On the Origin of Storms in the Bay of Bengal," by the secretary, Mr. C. Meldrum, with special reference to the monsoons and cyclones of the Indian Ocean.

THE last volume of the "Transactions of the Linnean Society," just published, contains Mr. Carruthers's long-expected paper "On Fossil Cycadean Stems from the Secondary Rocks of Britain."

MR. CHARLES T. BROWN, of the Geological Survey of Demerara, has lately returned from a journey of three months' duration in the interior. He has examined the Potaro, Siparunie, and Burroburro rivers, and the country beyond the heads of the latter two, which he finds to be table-land, composed of slightly-inclined beds of sandstone and conglomerate. On the Potaro river he met with a magnificent fall, hitherto unknown.

It is formed by the river falling from a table-land 1,375 feet above the sea, perpendicularly, in an unbroken fall of about 900 feet. The river is 100 yards wide, and from 10 to 15 feet deep in its deepest parts. It is with much regret we hear that the Combined Court of this colony have determined that this survey shall be discontinued.

IN the *Artisan* for June is an article by Mr. John Scott Russell, on "International Communication by Railway Steamships," a mode of performing the Channel transit which he has long advocated. The real point of difficulty he states to be this: Dover Harbour is the property of the Government; Calais Harbour is also the property of the French Government. He believes that if the two Governments lay their heads together, and simply make their harbours accessible, which can be done at a moderate expense, a great international communication can be easily established.

IN his annual address as President of the Canadian Institute, the Rev. Wm. Hincks makes use of the following argument in opposition to the Darwinian theory of Natural Selection:—"Nothing is to me more evident than that both seemingly permanent specific and higher differences, and varieties which have no pretensions to permanence, depend on the comparative development of different elements of a common plan; from which it seems to follow both that the non-existence from the commencement of living nature, of all the distinct plans of structure is in the highest degree improbable, and that the tendency of development, sometimes in one direction, sometimes in another, among the same primitive elements, must produce a harmonious system; whilst the preservation of the forms best adapted to a situation amongst a great number of variations arising without order must produce a confused mass of objects having no regular relations and incapable of being reduced to a common system. Which of these prevails in nature I cannot for a moment hesitate in deciding, and consequently I must maintain that, if there is variation, it must be within definite limits, and according to a fixed plan, so as to maintain a uniform order and harmony in the whole system."

A REMARKABLE *mirage* was seen at Ostend on May 19. Ships riding in the roads in the horizon were reflected in the sky as by a gigantic mirror; a brig, a steamer, and several fishing-boats appeared to have other similar vessels attached to the summits of their masts in a reversed position. The phenomenon lasted through the whole of the afternoon and evening, the wind being light from the N.N.E. From 5 to 6.30 P.M. the French coast was visible as far as Dunkirk, the houses being quite distinct, and the *dunes* appearing suspended in the air at a height of several metres, and somewhat moved in position towards the N.W. The port of Niewport seemed so near that the bridge was distinctly visible.

IN the last number of the *Revista das Obras Publicas* (Review of Public Works), Senhor C. A. Beirao mentions an interesting phenomenon of terrestrial refraction, observed by him on the evening (or afternoon, *vespera*) preceding the storm which caused such damages on the Tagus on Easter Day. Here is what Senhor Beirao says about the phenomenon:—"From the house in which I live, in the Rua (street) of S. Joao da Praça,* only about a third of the upper part of the Bugio Lighthouse is to be seen, all the rest is interrupted by the roofs of the buildings in the Praça do Commercio (called by the English 'Black Horse Square,' where all the public departments stand). On that occasion (half-past four o'clock P.M. on Saturday of Alleluia) as I by chance directed my spy-glass towards the tower (*i.e.* of the Bugio), I remarked that not only the latter was completely in view, but also the surface of the water to a distance of many metres on this side the Tower, which indicated, with respect to the latter, an elevation of fifty to sixty metres, at least, over the line of normal vision."

THE second part of the Proceedings of the Bristol Naturalists' Society contains a notice, by Dr. H. E. Fripp, of recent observations of Amœbæ and Monads by Greef and Cienowski, in which he describes the species of Amœbæ and Rhizopods recently discovered living in the earth; a paper by S. H. Swayne on the Scales and other tegumentary organs of Fish; an analysis by Mr. Sanders, of the Report on Theories of Elevation and Earthquakes, presented to the British Association by the late Professor Hopkins; a note by a lady associate on a novel application of tea leaves for promoting the growth of plants; and a paper on the Descent of Glaciers, by the Rev. Canon Moseley, in which he refers the motion of glaciers to a succession of small alternations of temperature, causing expansion and contraction with a cumulative effect. There is also a paper, by Mr. Stoddart, on Rain-water collected in Bristol, showing the presence of considerable amounts of saline material in the water.

AN icono-photograph album, containing numerous figures of the appearances presented by sections of the nervous centres, has just been presented by Dr. Ducheune, of Boulogne, to the French Academy of Medicine. He states he has obtained excellent results from sections of the great sympathetic nerve, the spinal ganglia, the spinal cord, and of the medulla oblongata when magnified from 8 to 500 times. The plan was suggested some years ago by Dr. Ducheune himself; but it was found that the photographs obtained in the ordinary method were not persistent. He therefore fixed them on stone by a process he terms photo-autography, the details of which, however, he does not communicate. It is satisfactory to find him stating that the results of his experiment and photographs only confirm the substantial accuracy of the beautiful drawings made by Dr. Lockhart Clarke on the central parts of the nervous system, and especially upon the medulla oblongata. In his later experiments Dr. Ducheune has adopted Dr. Clarke's mode of preparation with chromic acid and carmine. He states that certain micrographic details come out with wonderful clearness in the photographs, and that by this means some important additions may be made to our knowledge. Thus he has ascertained that in the white substance of the medulla oblongata there are a large number of very small nerve tubules (0$^{\text{mm}}$, 0033) diameter mingled with others of average and of large diameter 0$^{\text{mm}}$, 0 1 to 0$^{\text{mm}}$, 0 2 and ·0·3.

FROM the proceedings of the Institute of Lombardy, reported in the *Imparziale* of the 16th May, we extract the following results of the important experimental researches of Prof. Mantegazza on the action of the essences of flowers on the production of atmospheric ozone. 1. The essences of mint, turpentine, cloves, lavender, bergamot, anise, juniper, lemon, fennel, nutmegs, cajeput, thyme, cherry laurel, in contact with atmospheric oxygen in light, develop a very large quantity of ozone, equal if not superior in amount to that produced by phosphorus, by electricity, and by the decomposition of permanganate of potash. 2. The oxidation of these essences is one of the most convenient means of producing ozone, since even when in very minute quantity they can ozonise a large quantity of oxygen, whilst their action is very persistent. 3. In the greater number of cases the essences, in order to develop ozone, require the direct rays of the sun; in a small number of cases they effect the change with diffused light; in few or none, in darkness. 4. In some cases, however, the action just commenced in solar light was found to persist to some extent when the essence was placed in darkness. 5. In some cases a vessel perfumed with an essence and afterwards thoroughly washed with alcohol and perfectly dried, could still develop a proportionate quantity of ozone, provided that it retained a slight odour of the essence. 6. The essences that developed the largest quantity of ozone were those of cherry laurel, palmarosa, cloves, lavender, mint, juniper, lemons, fennel, and bergamot; those that gave it in less quantity were anise, nutmeg, cajeput, and thyme. 7. Camphor, as an ozonogenic agent, is inferior to all the above-named essences. 8. Eau de Cologne, honey water, and other perfumes, or aromatic tinctures, develop a proportionate quantity of ozone when they are exposed to the direct rays of the sun. 9. The flowers of the narcissus, hyacinth, mignonette, heliotrope, lily of the valley, &c., develop ozone in closed vessels. Flowers destitute of perfume do not develop it, and those which have but slight perfume develop it only in small quantities. As a corollary from these facts the professor recommended the use of flowers in marshy districts and in places infected with animal emanations, as the powerful oxidising influence of ozone may destroy them. The inhabitants of such regions should surround their houses with beds of the most odorous flowers.

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* This street is about four-and-a-half miles from the said Bugio lighthouse.

THE fourth part of the "Researches undertaken in the Physiological Laboratory of Wurzburg," edited by Dr. Richard Gscheidlen, has been published. It contains a kindly notice of the life of Albert von Bezold, so untimely snatched away by death; a most profound investigation on nerve and muscle electricity, an abstract of which, we fear, would be unintelligible to our readers, by Worm-Müller, of Christiania; an essay on the Calabar bean, by the editor, and some remarks on the movements of the Iris, by Dr. Engelhardt. In this last it is shown that atropine paralyses the extremities of the third nerve, whilst Calabar bean acts as an irritant upon them, and he holds that there is a ganglionic nervous centre or organ imbedded in the iris, and intercalated between the fibres of the third and the sphincter which acts as an inhibitory centre on the sympathetic.

PRIZE MEDALS OF THE ROYAL GEOGRAPHICAL SOCIETY

THE Royal Geographical Society of London having taken into consideration the fact that a knowledge of geographical facts, and still more a knowledge of the science of geography, is not so common among educated persons as it ought to be, determined, about two years ago, to offer prizes in the shape of gold and bronze medals, to be competed for by boys from certain selected public schools. The principle which governed the choice of the schools, was the number of boys who were receiving education therein; no school having less than 200 boys being chosen for the competition.

An effort was made, at the time that the matter was under discussion, to get girls admitted as candidates. It was, however, objected that there were no public schools for girls which could be invited to compete, and it was also said that it might be well to see how the experiment would work with boys before inviting girls to the competition.

These questions being settled, the next thing to arrange was the manner in which the examinations should be conducted. It was obvious that to bring a number of boys from the various schools scattered all over the country to London, would be practically impossible; and it was equally obvious that some process of selection would have to take place in the schools themselves, so that the best boys only should have their papers sent to the examiners appointed by the Council of the Royal Geographical Society. It was therefore determined that the subjects of examination should be divided into Political Geography and Physical Geography, and that no candidate should be permitted to be examined in both subjects at the same time. Moreover, not more than four candidates in each subject were allowed to take the papers; these four, of course, having been selected by the masters of the various schools from among those most likely to pass. The Council of the Geographical Society could not undertake to direct any preliminary examination—that had to rest entirely with the authorities of the various schools.

It was ultimately determined that the examination should take place by means of papers of questions, which should be sent in sealed packets to the Head Masters of the selected schools; and that these papers should be given out and worked simultaneously at all the schools. The superintendence of the examinations was to be done by a master of each school, who was to be present during the whole time the paper was worked. In order to ensure, as far as possible, the strict fulfilment of the conditions under which the examination was to take place, a declaration was required to be signed by all the masters who were present while the work was going on. This declaration set forth that the candidates worked the papers without assistance, and that there were no globes or maps in the room where they were written. It also declared that the specified masters were present during the whole of the time.

Thirty-seven schools, containing in the aggregate about 12,700 boys, were invited to compete at the first examination. These schools included the nine schools of the Royal Commission of 1864, and all others in England, Scotland, and Ireland which, according to the latest edition of the "Public Schools Calendar," contained not less than 200 boys.

Twenty-one of the invited schools sent candidates; no school being permitted to send more than eight boys, four candidates in the subject of Physical, and four in that of Political Geography. Many schools did not send the maximum number. In fact, four schools had only one candidate each; and out of the twenty-one schools, only four presented the highest number of candidates allowed. Last year forty-two schools were invited to take part in the examinations, but only nineteen sent candidates.

The papers set, both in Physical and Political Geography, bore a remarkable resemblance to each other, and in looking over the syllabus published by the Geological Society, it is impossible not to feel that the line between the two is very feeble, and, in some instances, indefinitely indicated. The special subject appointed for next year is North America.

The examiners appointed for the first year were the Rev. W. G. Clark, F.R.G.S., Public Orator of the University of Cambridge, for Political, and Mr. A. R. Wallace, F.R.G.S., for Physical Geography; and for the second year the Dean of Chester for Physical, and Mr. Wallace for Political Geography.

The successful candidates received their awards last year and this at the anniversary meetings of the Royal Geographical Society.

Rossall School and the Liverpool College have been very distinguished in the examinations. In the first year Rossall carried off both the gold and the bronze medals for Physical Geography; and in the second year the bronze medal for Physical, and the gold medal for Political Geography, both fell to pupils of the same school. The Liverpool College gained the gold medal for Political Geography in the first year, and the gold for Physical, and bronze for Political, in the second year. Honourable mentions have also been gained by the pupils of various other schools.

A very remarkable fact, to be noticed as the result of these examinations, is that the schools which obtained the prizes are not those which the general public is accustomed to look upon as the leading schools of England; while Eton, Harrow, and Rugby are among those who have, as yet, sent no candidates at all. This is the more noticeable as, to Englishmen, the travellers of the world, and the subjects of a monarch on whose dominions the sun never sets, it does appear as if geography ought to be a subject of vast importance instead of being one in many cases almost neglected. Sir R. Murchison, in presenting the medals at the recent meeting of the Royal Geographical Society, hoped that Eton, Harrow, Rugby and other great schools might, in future years, send candidates, "for, without geography, a man cannot be said to be educated at all." Westminster School, it may be stated, to the disgrace of the rest, is the only public school represented in the competition, and has twice had honourable mention.

The Royal Geographical Society has made a wise step in inaugurating this movement, which will give, it is to be hoped, a powerful stimulus to the popular study of geography. The learned societies are at present too much dissociated from the general education of the country. Science has so few votaries among the bulk of the population, that a knowledge of scientific facts, with anything like accuracy, or an acquaintance with scientific methods of working, is almost totally absent from the education of the majority. The scientific man is still to too many persons a species of magician, arriving at his information in occult ways, not to be penetrated by the ordinary observer.

Government is called upon from all sides to do this and that